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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,604	09/27/2001	Victor M. Benveniste	ETE-025	4759

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28 STATE STREET
BOSTON, MA 02109

EXAMINER

HE, AMY

ART UNIT	PAPER NUMBER
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2858

DATE MAILED: 11/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,604

Applicant(s)

BENVENISTE, VICTOR M.

Examiner

Amy He

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figure 1 is objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 10, 30 and 34. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8, 9-15 and 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaguchi et al. (U.S. Patent No: 5,113,072).

Referring to claim 1, Yamaguchi et al. discloses a system for determining the presence or absence of an ion in a plasma, comprising:

an ion source (a liquid metal ion source, column 7, lines 63-65; 1908 in Figure 19) having a plasma chamber(chamber 1201 in Figure 12) sized and dimensioned for generating a plasma having an ion present therein, and

a probe assembly (the combination of 1203, 1206-1208, 1901, 1214-1216 and 1221 in Figures 12 and 19) coupled to the ion source for detecting said ion of said plasma.

Referring to claim 2, Yamaguchi et al. discloses the system of claim 1, wherein said probe assembly comprises a probe device (a filament 1203 and extraction electrode 1206 in Figure 12, 1203 extends within the chamber 1201) extending within the plasma chamber for extracting said ion (by the extraction electrode 1206 in Figure 12) from said plasma (column 7, line 68-column 8, line 5).

Referring to claim 3, Yamaguchi et al. discloses the system of claim 2, wherein the probe device comprises:

a probe body device (a filament 1203 in Figure 12) having a conical tip disposed within the plasma chamber, and

a focusing element (the second lens, 1214-1216, column 8, lines 22-24; and the first lens, 1206-1208, column 8, lines 2-6) mounted to said probe body and adapted for generating a field (electric field, column 8, line 2), when energized, therein.

Referring to claims 4 and 5, Yamaguchi et al. discloses the system of claim 1, wherein the probe assembly comprises:

a probe device (filament 1203 and extraction electrode 1206 in Figure 12) for extracting one or more of said ions from said plasma, and

a filter (a Wien filter 1901 in Figure 19) coupled to said probe device for filtering said one or more ions extracted by said probe device from said plasma (column 10, lines 4-5).

Referring to claim 8, Yamaguchi et al. discloses the system of claim 4, further comprising means for generating an electric field (extraction electrode 1206 in Figure 12, column 8, line 2) within the filter to separate one or more ions based on ion velocity.

Referring to claim 9, Yamaguchi et al. disclose the system of claim 1, further comprising a vacuum source (a source for creating the vacuum chamber 1201 in Figures 12 and 19) coupled to said probe device for creating a selected pressure condition therein for facilitating extraction of said ion from said plasma chamber.

Referring to claim 10, Yamaguchi et al. discloses the system of claim 1, wherein said probe assembly comprises a probe device (filament 1203 in Figure 12) having a probe body, a portion of which is adapted to extend into said plasma chamber (1201 in Figure 12), and a set of electrodes (extraction electrodes 1206-1208 in Figure 12) coupled to said probe body for creating a field (electric field) therein.

Referring to claim 11, Yamaguchi et al. discloses the system of 1, wherein said probe assembly comprises a probe device (filament 1203 and extraction electrode 1206 in Figure 12) for extracting one or more ions from said plasma, a filter (a Wien filter 1901 in Figure 19) for filtering said ions, and a controller (1221 in Figures 12 and 19) for detecting said one or more ions.

Referring to claim 12, Yamaguchi et al. discloses a probe assembly suitable for use with an ion source for detecting an ion in a plasma within a plasma chamber of the ion source, comprising:

a probe body (filament 1203 and extraction electrode 1206 in Figure 12) adapted for extending at least partly within the plasma chamber of the ion source;

a focusing element (the second lens, 1214-1216, column 8, lines 22-24; and the first lens, 1206-1208, column 8, lines 2-6) coupled to said probe for generating a selected field within the probe; and

a filter (a Wien filter 1901 in Figure 19) coupled to said probe for filtering said ion passing through said probe and extracted from said plasma chamber.

Referring to claim 13, Yamaguchi et al. discloses the probe assembly of claim 12, wherein said probe body (filament 1203 and extraction electrode 1206 in Figure 12) comprises a passageway sized and dimensioned for allowing the ion to pass there through, said body having a conical end portion that extends within the plasma chamber.

Referring to claim 14, Yamaguchi et al. discloses the probe assembly of claim 12, wherein a set of electrodes (extraction electrodes 1206-1208 in Figure 12) is coupled to said probe body for creating a field (electric field, column 8, line 2) therein.

Referring to claim 15, discloses the probe assembly of claim 14, wherein said electrodes comprises a quadrupole focusing element (the second lens, 1214-1216, column 8, lines 22-24; and the first lens, 1206-1208, column 8, lines 2-6) for generating a field (electric field) within the probe body for said ion from said plasma chamber.

Referring to claim 17, Yamaguchi et al. discloses a method for detecting an ion within a plasma generated within a plasma chamber (1201 in Figure 12) of an ion source(1908 in Figure 19), comprising the steps of :

extracting the ion from the ion source with a probe device (column 7, line 68-column 8, line 5); and

detecting the ion extracted from the plasma chamber (column 8, lines 1-30; column 10, lines 1-8).

Referring to claim 18, Yamaguchi et al. discloses the method of claim 17, further comprising the step of, prior to the detecting step, filtering (by using a Wien filter, column 10, lines 1-8) one or more ions extracted from the ion source.

Referring to claim 19, Yamaguchi et al. disclose the method of claim 17, wherein the step of filter comprises the step varying a field (varying a magnetic field, column 10, lines 6-8) so as to filter the one or more ions based on ion velocity.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (U.S. Patent No: 5,113,072).

Referring to claim 16, Yamaguchi et al. discloses the probe assembly of claim 12, wherein said filter is a Wien filter. Yamaguchi et al. does not disclose the use of an EXB filter. A person of ordinary skill in the art at the time the invention was made would find obvious to substitute the Wien filter with an EXB filter since choosing to use a Wien or an EXB filter is more dependent upon the desire of the user and the situation involved, or the choice of manufacturers, since a filter is necessary to extraction.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (U.S. Patent No: 5,113,072) as applied to claim 17 above, and further in view of Rand et al. (U.S. Patent No: 6,208,711).

Referring to claim 20, Yamaguchi et al. discloses the method of claim 17. Yamaguchi et al. do not disclose the step of twisting a set of electrodes to produce a rotating quadrupole field that alternately focuses ions in all directions. Rand et al. disclose such a twisting step (column 5, lines 27-35). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the step of twisting the electrodes as taught by Rand et al. in order to produce a focused ion beam with zero net displacement.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (U.S. Patent No: 5,113,072) as applied to claims 1 and 4 above, and further in view of Parker (U.S. Patent No: 4,789,787).

Referring to claims 6 and 7, Yamaguchi et al. disclose a Wien filter for filtering the ions extracted from the plasma. Yamaguchi et al do not specifically disclose a Wien filter comprises a plurality of steel strips biased at different voltages to produce one of a potential gradient and a uniform electric field. Parker discloses such a Wien filter (Figure 4b; column 6, lines 9-16). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Yamaguchi et al. to use a Wien filter as taught by Parker for the advantage of speeding up the transmission of charged particles through the filter.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 4,691,662--Dual plasma microwave apparatus and method for treating a surface. A vacuum source is disclosed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (703) 305-3360.

The examiner can normally be reached on 8:30am-5pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, N. Le can be reached on (703) 308-0750.

The official Fax numbers for the organization are (703-872-9318) Before-Final and (703-872-9319) After-Final Office actions. Any inquiry of a general nature relating to this application should be directed to the receptionist at (703) 305-4900.

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AH

November 1, 2002



N. Le
Supervisory Patent Examiner
Technology Center 2800